

MEMORANDUM

Copies

George Ferreri
Robert Beman
Donald Andrews

TO Walter E. Raum, Chief
Environmental Hygiene From Thomas C. Snyder EH:AO:AM Date 12/11/78

Subject HOLLYWOOD CREOSOTE STUDY

Study History

In September, 1977, Mr. Walter Raum, Director of Environmental Hygiene, St. Mary's Co., Maryland, requested the assistance of the AQP in monitoring a nuisance odor emanating from the creosote process of Southern, Maryland, Wood Treatment Company, located in Hollywood, Maryland. A charcoal tube sampler was set up around the plant and monitoring proceeded from October, 1977 to May, 1978, as summarized in Appendix A. }

The pollutant adsorbed on the charcoal was desorbed in 10 ml of carbon disulfide. Figure 1⁽¹⁾ shows a reference creosote sample analysis profile performed by gas chromatography. From this reference profile it was decided to use naphthalene, 2-methylnaphthalene, 1-methylnaphthalene, biphenyl and acenaphthene as reference standards for creosote. The final operating standard employed was ALL #3 mixed standards which is summarized in Appendix A along with gas chromatography data.

Initially, a field model FID detector G.C. was used for analyses from October 22, 1977 through December 3, 1977. As this column and detector were insensitive to the creosote standards, the next modification to the analysis was to employ a microprocessor FID detector G.C. with the column referenced in Figure 1, for the December 9, 1977 through January 20, 1978 samples. A final modification to the analysis was to employ a PID detector on the microprocessor G.C. for the January 26, 1978 through May 14, 1978 samples. Again, this study data is summarized in Appendix A.

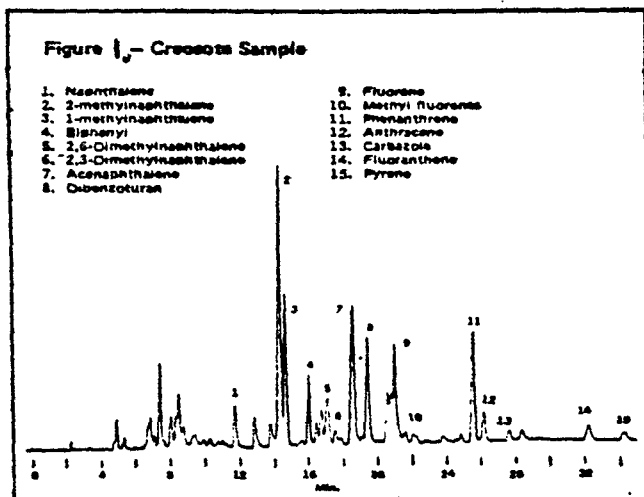
Appendix B summarizes the results from the study. Not a single detectable concentration of creosote standards (mixed standard ALL #3) exceeded 1.0 ppb in any of the samples, with the majority of the detectable concentrations being below 0.2 ppb. As the plant producing the creosote has since closed down, it is concluded that, in combination with the extremely low levels of creosote measured, the creosote odor nuisance presents no health hazard at all. }

Reference⁽¹⁾ "Analysis of Polycyclic Aromatic Hydrocarbons," Supelco, Inc. Bulletin 773, (1977), p.2.

Thomas C. Snyder
Thomas C. Snyder

AR100065

ORIGINAL



5% SP-2100/1% BM8T on 100/120 Supelcoport, 10 ft. x 1/8" SS.
 Col. Temp.: 85-225°C at 6°C/min., Flow Rate: 20ml/min., N₂.
 Det.: FID, Sample: 0.1µl.

AR100066

HOLLYWOOD CREOSOTE STUDY
Appendix A Study Parameters

Study Dates: 10-22-77 through 05-14-78
MN to MN sampling -- 24 hrs.
@ 2 l/hr flow = 2880 l per sample

G.C. Data: 2.5 ul sample injections
1 ul Mixed Standard ALL #3
dilute ~.13 - .15g of standard compound
to 100 ml CS₂ = 1° STD; dilute 2 ml of 1° STD
into 50 ml CS₂ = 2° STD; take each of the
5 2° STD's (see below) and add 5 ml of each
to 25 ml vol. flask = ALL #3 mixed STD

ALL #3 Mixed STD

<u>Compound</u>	<u>MW</u>	<u>1° STD wt</u>	<u>ALL #3 g/l</u>	<u>ALL #3 gmole/l</u>
naphthalene	128.16	0.1327g	1.0616x10 ⁻²	8.283x10 ⁻⁵
2-methylnaphthalene	142.20	0.1423g	1.1384x10 ⁻²	8.006x10 ⁻⁵
1-methylnaphthalene	142.20	0.1473g	1.1784x10 ⁻²	8.287x10 ⁻⁵
biphenyl	154.20	0.1577g	1.2616x10 ⁻²	8.182x10 ⁻⁵
acenaphthene	154.20	0.1552g	1.2416x10 ⁻²	8.052x10 ⁻⁵

Above order is that of elution from G.C. under any conditions.

10-22-77 to FID Detector AID G.C.
12-03-77 Column: 10%g 15-30 isothermal 130°C
(Elution order as above) Carrier Flow Rate: 30cc/min.

12-09-77 to FID Detector Antek G.C.
01-20-78 Column: 5% SP-2100/1.0% BMOT on 100/120 Supelcoport
Programmed Rate: @ 8°C/min; Initial T: 75°C Final T: 200°C
Carrier Flow Rate: 35cc/min

Elution Order

naphthalene: 5.70 min
2-methylnaphthalene 7.45 min
1-methylnaphthalene: 7.70 min
biphenyl: 8.75 min
acenaphthene: 10.35 min

01-26-78 to PID Detector Antek G.C.
05-14-78 Column: 5% SP-2100/1.0% BMOT on 100/120 Supelcoport
Programmed Rate: @ 4°C/min Initial T: 100°C Final T: 210°C
Carrier Flow Rate: 13cc/min

Elution Order

naphthalene:	10.20 min
2-methyl naphthalene:	13.40 min
1-methyl naphthalene:	13.80 min
biphenyl:	15.85 min
acenaphthene:	19.20 min

Note: Above five compounds chosen as standards based upon anticipated CREOSOTE spectrum taken from Supelco references which also provided reference source for column used.

AR100068

HOLLYWOOD CREOSOTE STUDY

Appendix B Results

<u>Date</u>	<u>Compound</u>	<u>Ug/m³</u>	<u>ppb</u>
10-22-77	DNR		
10-28-77	naphthalene:	< 5.242	< 1.0
	2-methyl naphthalene:	< 5.816	< 1.0
	1-methyl naphthalene:	< 5.816	< 1.0
	acenaphtene:	< 6.307	< 1.0
11-09-77	DNR		
11-15-77	DNR		
11-21-77	DNR		
11-27-77	DNR		
12-03-77	DNR		
12-09-77	ND		
12-15-77	ND		
12-21-77	ND		
12-28-77	naphthalene:	0.646	0.123
	biphenyl:	0.774	0.122
	acenaphthene:	1.085	0.172
01-02-78	naphthalene:	0.351	0.067
	2-methyl naphthalene:	0.327	0.056
	1-methyl naphthalene:	0.268	0.046
	biphenyl:	0.272	0.043
01-08-78	ND		
01-14-78	naphthalene:	0.725	0.138
	2-methyl naphthalene:	0.337	0.058
	1-methyl naphthalene:	0.209	0.036
	acenaphthene:	0.562	0.089
01-20-78	ND		
01-26-78	ND		
02-01-78	DNR		
02-07-78	ND		

AR100069

<u>Date</u>	<u>Compound</u>	<u>ug/m³</u>	<u>ppb</u>
02-13-78	acenaphthene:	0.606	0.096
02-19-78	2-methyl naphthalene:	1.063	0.183
	acenaphthene:	0.921	0.146
02-25-78	1-methyl naphthalene:	0.116	0.020
03-03-78	ND		
03-09-78	ND		
03-15-78 (#1)	1-methyl naphthalene:	0.172	0.030
03-15-78 (#2)	ND		
03-21-78	DNR		
03-27-78 (#1)	2-methyl naphthalene:	0.518	0.089
	1-methyl naphthalene:	2.346	0.372
	biphenyl:	0.459	0.073
	acenaphthene:		
03-27-78 (#2)	ND		
04-02-78	DNR		
04-08-78	biphenyl:	1.495	0.237
	acenaphthene:	2.806	0.445
04-14-78	ND		
04-20-78	biphenyl:	2.422	0.384
04-26-78	ND		
05-02-78	biphenyl:	0.238	0.038
	acenaphthene:	0.719	0.114
	acenaphthene:	1.140	0.181
05-14-78	ND		

DNR = Did Not Run

ND = None Detectable

AR100070